

# **VIRTUAL LEARNING TOOLS IN HIGHER EDUCATION. EDIEDPAT, AN INTERACTIVE PLATFORM FOR URBAN HERITAGE TEACHING**

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## **Abstract**

The paper proposes to address a teaching innovation experience based on the use of a shared virtual learning platform. This tool links subjects from different teaching centres that deals with urban heritage issues as well as debates focused on the impact of tourism in historic areas. This experience is framed within the Campus of International Excellence Andalucía Tech, linking the Bachelor's Degree in Architecture from the Universities of Seville and Malaga.

As collaborative virtual environments, EDIEDPAT is a digital bookshelf where students' exercises are systematically collected. It serves as a platform for online discussion in real-time between students and teachers. Also, students can consult additional learning resources and share personal reflections and findings with the rest of the participants.

In opposition to traditional teaching forms, in which the focus falls solely on the teacher, the model tested has placed the student at the centre of learning. Work has been carried out on the collaborative construction of the learning content through shared reasoning processes in which students can develop autonomous reasoning skills by fostering active learning. In the context of undergraduate architecture studies, the goal of this interactive teaching tool is to provide a significant heritage interchange place, through different examples, close and recognisable by all of them. Students work collaboratively, transforming the finalist product of the traditional master class in a process of individual research and shared work and knowledge. Thus, the platform would allow professors to develop reasoning capacity and critical reflection among the students.

This methodology is seen as an opportunity to wide students' perspective concerning the different ways of tackling a heritage object. The comparative analysis will allow them to assume additional concepts by not circumscribing them exclusively to their sphere of action.

Finally, this paper will contextualise this initiative within a broad state-of-the-art on virtual tools in university teaching. Their general use of digital instruments is one of Higher Education's main challenges, although the COVID-19 pandemic has accelerated its implementation in many European teaching centres, such as the case presented in the University of Seville (Andalusia, Spain). Consequently, the research will analyse and reflect on the suitability of these teaching tools for e-learning experiences and distance teaching, such as those forcibly experienced worldwide during the last year.

**Keywords:** Andalucía Tech, Collaborative Learning, CVEs, Digital Tools, E-Learning, New Training Strategies, Teaching Innovation, Virtual Learning Environments.

## **1 INTRODUCTION**

The crisis caused by the emergence of the global COVID-19 pandemic has affected all social levels and the usual development of activities in the most diverse fields. The measure that had the most impact in Spain was the lockdown, from 15<sup>th</sup> March to 21<sup>st</sup> June 2020. All non-essential working activity changed mandatory into teleworking. In the case of education, teaching suddenly adapted to online education at all grades. The whole university community had to adapt to a situation of forced non-face-to-face teaching and e-learning. The New Technologies of Information and Communication played a special role [1]. In this context, the use of virtual platforms became a highly supportive educational resource for online teaching. Most of these resources were originated from the implementation of teaching innovation experiences, especially in higher education. Some of the examples of the tools used are digital diptychs [2], virtual visits [3] or the use of own platforms such as EDIEDPAT [4] or others.

The innovation originated from the creation of an own platform is proposed as an educational tool. It has been designed as a repository that can be constantly updated and it is open access. The website, called EDIEDPAT, arose from an experience inserted in the Andalusia Tech International Campus of Excellence, in which various teachers and subjects from the Seville and Malaga Schools of Architecture participate. EDIEDPAT is conceived fundamentally for teaching heritage from various subjects of the Bachelor's Degree in Fundamentals of Architecture. In this sense, it stands mainly as a database, where students have access to practical work from previous courses, thus being able to expand their knowledge of a wide register of academic works in the heritage field. The subjects involved address a collaborative teaching approach focused on heritage subjects and tourist areas (Table 1).

The EDIEDPAT platform is proposed as a space for the exchange of teaching experiences with a series of features that facilitate its access and "usability". These are fundamental factors to improve the results of the teaching instruments [5]. The web space has a simple interface, together with a friendly and dynamic design distributed in four large blocks. The first deals with the EDIEDPAT project as a teaching resource. The objectives, universities and subjects involved are described here. The second is focused on teaching material, conceived as a virtual repository. In this section, the academic works of the different courses and subjects are collected. In addition, work methodologies are included as virtual materials, complementary to the website itself. In the third, there is the discussion group where both students and teachers interact. Therefore, the teaching-learning process not only considers the theoretical-practical content developed in class but is also transferred to debate and reflection. Finally, the platform has a contact section in which any user can direct their questions to the research group Heritage and Territorial Urban Development in Andalusia (HUM700 - University of Seville), responsible for the didactic resource.

*Table 1. Subjects involved in EDIEDPAT.*

University	Subject	Bachelor's Degree	Subject type	Academic Year
Seville	Urban Planning 1	Fundamentals of Architecture	Compulsory	1
Malaga	Urban Planning 3	Architecture	Compulsory	3
Malaga	Heritage, Tourism and Territory	Architecture	Optional	4
Seville	Architectural History, Theory and Composition 3	Fundamentals of Architecture	Compulsory	4
Seville	Urban Heritage and Planning	Fundamentals of Architecture	Optional	5

## 1.1 Objectives

The main objective of this contribution is to demonstrate the innovation proposed through the creation of the EDIEDPAT platform as a new teaching tool. Likewise, it is intended to evaluate how the use of this resource allows to facilitate the understanding of the current concept of heritage in a broader way. Consequently, the possibilities offered by new technologies are explored to update learning methods and enable the assessment of students' work inside and outside the classroom [6].

Specifically, it has been assessed how the creation of an interaction platform has made it possible to speed up and assist teacher-student and inter-student communication. Also, it has been analyzed how students' access to former works thanks to this platform has helped them to the completion of their practices.

In brief, the ultimate objective of this research focuses on validating the implementation of the EDIEDPAT tool as part of the teaching methodology. Subsequently, the results, degree of acceptance and success after using this application in a teaching environment will be evaluated. It should be noticed that the implementation of its use has been accelerated due to the COVID-19 pandemic.

## 2 METHODOLOGY

The methodology developed for this study is based mainly on the analysis of the implementation of digital resources for innovation and educational enrichment, centered on the EDIEDPAT tool. In this sense, the results obtained in the last academic year (2019-2020) and during the present one (2020-2021) are addressed. Both teaching periods have been affected by the scenario of the COVID-19 pandemic, an issue that stands as an accelerating factor of previously initiated processes. The following limitations have been considered: those inherent to the participating subjects themselves, the duration of the course, the breadth of the concepts to be addressed, the diversity of courses in which it is applied and the different origins of the students.

To start with, it has been conducted an approach to the panorama of virtual educational resources. These are constituted by repositories of specialized information and meeting forums for students and teachers. Therefore, it is intended to demonstrate the relationship of the EDIEDPAT platform with the current context based on e-learning.

Next, the functionalities that this online resource (EDIEDPAT) provides to higher education in the field of urban heritage and tourism have been characterized. The relevance of the digital resource for teaching based on the progressive analysis of different objects of study is studied. Subsequently, a review is proposed through this educational exchange platform. This question, presumably, allows us to address with greater guarantees the breadth and transversality that currently define the concept of Cultural Heritage.

Finally, from the analysis of the implementation of the tool in regular teaching during the pandemic, it has been considered the success of EDIEDPAT considering the participation of the students in the debates. The topics proposed for the discussions have tackled current issues that affect society and its development in the city, the urban and architectural space, as well as the heritage area.

## 3 RESULTS

### 3.1 EDIEDPAT in the e-learning environment

There are several online resources known and usually used in the research field. Sometimes there is a transfer of their use from research to teaching practice. These are understood as databases that hold scientific texts and information. They have greater reliability and quality, making them ideal for consultation by university students. At a global level, the Google Scholar platform [7] stands out, a virtual space that brings together documents and researchers of the most diverse nature worldwide. Focusing our attention on Spain, the Dialnet repository [8] is one of the national benchmarks. Going down the scale, at the level of the University of Seville itself, the Research Repository called idUS [9] hosts research ranging from articles and book chapters to Doctoral Theses, as well as academic work, such as Final Degree Projects and Master's Theses. The consultation and downloading of these university documents serves as a basis for students who, for the first time, are faced with the task of carrying out a final project. This is why the democratisation of this information takes on greater importance for the improvement of higher education.

Furthermore, the Digital Guide [10] to the Cultural Heritage of Andalusia, a specific web resource in the heritage field on which EDIEDPAT focuses, stands out. This virtual tool is limited solely to the territory of Andalusia, the geographical area in which the Schools of Architecture of Seville and Malaga are located. The platform contains information on tangible and intangible heritage assets of the autonomous community of Andalusia, using different filters to manage them. For example, the differentiation between movable and immovable assets. At the same time, and more specifically with regard to contemporary heritage, highlights the virtual repository of the Iberian Docomomo foundation [11], conceived as a register of notable buildings recognised within the Modern Movement.

Against this backdrop, the EDIEDPAT interactive educational space seeks to be strategically placed. The platform aims to find a balance between the repository of academic work carried out on the basis of research into cultural heritage and tourism. However, it is chosen not to be understood as a static tool. It does not consist of a collection of knowledge generated in the university environment, but rather the inclusion of debates and open discussion, making it more like a forum. On a scientific basis, current issues affecting society and the urban-heritage spheres are discussed and debated. This "virtual square" for specialised discussions is a meeting point for students and teachers from the universities of Malaga and Seville who participate in the educational project.

### 3.2 EDIEDPAT as a tool for innovative teaching and active learning

On the international scene, the educational debate focuses, among other issues, on the need to evolve and improve the traditional university teaching model, as well as on the relevance of overcoming the merely transmissive model [12]. These issues have even been addressed by international organisations such as UNESCO since the end of the last century [13]. In Europe, both the Bologna process and the development of Information and Communication Technologies have driven the transformation of higher education [1].

Innovative teaching techniques are aimed at overcoming the unidirectional model through more dynamic teaching. This is proposed through the sequencing of activities of a varied nature, based on the words of Jeanette Norden: "the brain loves diversity" [14]. Although the basis of the innovation presented in this work is mainly based on a virtual tool, we have tried at all times to avoid the so-called "technological didactic model", a concept developed in the book *"Enseñanza Universitaria"* [15].

It should be noted that this teaching innovation experience is based on different improvement actions that had already been previously implemented in the various subjects that make up EDIEDPAT. This is a consequence of the participation of the teaching teams of these subjects in the Teacher Training and Teaching Innovation Programme of the University of Seville in its last four editions [16], the results of which have been disseminated and published [17] [18] [19] [20] [21]. The so-called Cycles of Improvement in the Classroom (CIC or CIMA in Spanish) involve an evaluation of the teaching-learning process that involves the revision of both the content and the teaching methodology used. The last phase of this teaching innovation process has been the implementation and use of the interactive resource EDIEDPAT, based on the improvement of the students' learning experience through two utilities. On the one hand, the platform allows the consultation of specialised academic papers (Figure 1). On the other hand, it generates a specialised discussion forum based on scientific evidence (Figure 2).

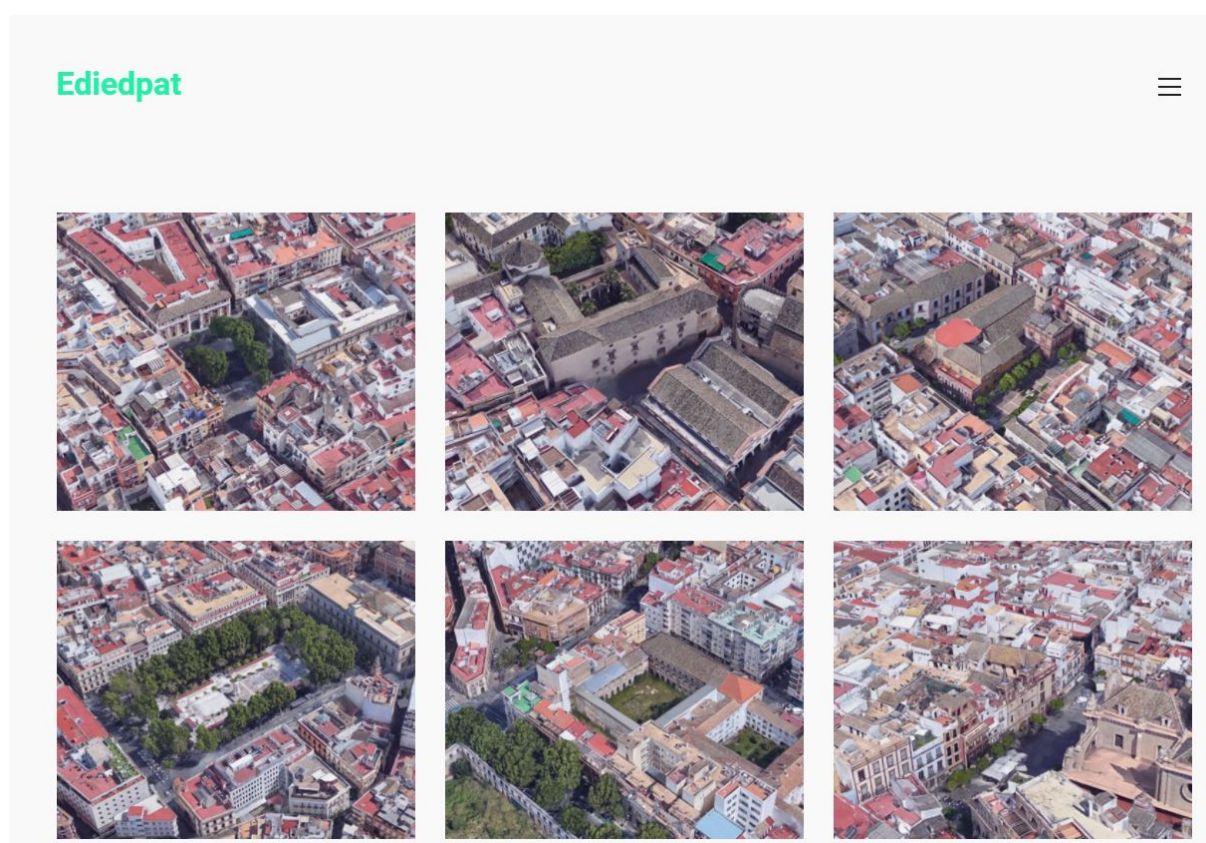


Figure 1. Screenshot of the EDIEDPAT website in the practical work section from previous years.  
Source: Authors.

These tools had already been used in the past. However, the pandemic situation provided an excellent opportunity to fully implement the use of the platform. In addition to the innovation aspects mentioned above, the development of discussions was particularly encouraged.

The repository has continued to be a crucial element for the normal development of the proposed course practice. But the discussion forum has acquired special importance as a result of this situation. It has provided a meeting place for students, where discussions can take place in a more fluid way. These are centred on subject themes that serve to progressively build up their own learning.

The active role and critical sense of the students has been fostered through the discussions. This teaching format allows students to develop research skills based on the initial problem posed. The aim was for students to defend a position on a real current issue, justifying their arguments on the basis of specialised and contrasted knowledge. To do this, they had to read a series of related documents (which had been compiled by the students themselves and complemented with others provided by the teaching team). In this way, students were encouraged to develop their capacity for reasoning and critical reflection.

### **3.3 The use of EDIEDPAT during the pandemic**

The main innovation faced with a non-classroom scenario was based on the generation of a virtual debate space, where each student could express his or her own vision of the proposed topics on the basis of justified answers. In this way, students were encouraged to play an active role in the course of the regular classes and in the subject in general.

The main contribution of the debates regarding the use of the work repository is that, while being two forms of active learning, interaction between the different components of each subject is implemented, within the framework of the proposed forum.

#### **3.3.1 *The experience of virtual discussions as spaces for joint reflection at a distance***

During the 2019-2020 academic year, three different debates were proposed with up-to-date topics, which responded to the needs of each subject and the central topic addressed by each one.

In this sense, the debate "How to move in the post-Coronavirus city" was proposed for the compulsory first-year subject at the School of Seville: Urban Planning I. This was a noteworthy opportunity to address a subject whose main line of study is about the city and the urban area. The aim was to establish a joint reflection on the post-pandemic city. The training of the urban planner, as the person responsible for the design of public space, mobility networks and urban furniture, must take into account the situations derived from the social processes at each stage. Among these issues, mobility and the use of public space in cities is the result of new needs for social distancing, sustainable mobility and the crisis of mass tourism. These issues are of growing interest and topicality, all of them addressed and reflected upon in a forum that is born in the heart of the university.

On the other hand, the course Urban Heritage and Planning is more specialized in heritage issues. It is an optional subject of the 5<sup>th</sup> academic year also at the School of Architecture of Seville. Concerning this course, EDIEDPAT platform addressed two current topics: "The movie theatres heritage protection" and "Contemporary Heritage: Le Corbusier's work included in the UNESCO World Heritage List".

The first topic focused on the recent announcement of three movie theatres in the city of Seville as Assets of Cultural Interest (*Bien de Interés Cultural* or BIC in Spanish). They were all designed and built during the late 19<sup>th</sup> and the early 20<sup>th</sup> century by well-known architects, such as, Juan Talavera de la Vega, José Espiau y Muñoz and Aníbal González. Their protection announcement and, consequently, their inclusion in the Andalusian Heritage List under the Monuments typology have been seen as an opportunity for the students training. Thanks to this work, they could become familiar with the specialized search engine of the General Catalogue of the Andalusian Historical Heritage - CGPHA- [22]. In fact, by analysing these cases in the context of urban planning heritage protection, they could develop deeper knowledge in heritage issues. This work tried to approach the students to the different tools, such as Heritage Protection Catalogues [23] inserted into the Special Protection Plans (PEP) and/or the General Master Plans (PGOU). It would show the existing differences between urban planning figures and would also demonstrate the diverse competences of the regional governments, such as Junta de Andalucía, and the municipalities, concerning heritage matters.

Afterward, the second topic addressed was related to Le Corbusier's work, recently included in the World Heritage List as a Heritage Site. Since contemporary heritage counts on a smaller social



recognition, it seemed interesting to work in the recent inclusion of these 17 Le Corbusier's works in the so-called UNESCO List. The methodology would try the student to work using specialized concepts and heritage statements, such as the Prague Declaration of 1971[24], the Eindhoven Declaration for the Creation of the International Docomomo [25] and the Recommendation No (91) 13 [26]. At the same time, the students would need to know how to use databases such as the UNESCO World Heritage List [27] or specialized publications such as "World Heritage Papers" at its No (5) [28]. By doing so, efforts were made to immerse the students in a way to support their reflections on a scientific basis in the aftermath of specialized research.



Figure 2. Screenshot of the EDIEDPAT website in the latest discussions section. Source: Authors.

As a result of these three discussions, the total amount of interactions and participants has been studied. It is important to be able to quantify this data, in order to assess how EDIEDPAT has worked. In addition, the total number of students in these subjects and their use of the course have been considered.

In the subject of Urban Planning 1, out of 30 students enrolled, just 25 followed the course. In the case of Urban Heritage and Planning the number of enrolled students was 22, and there was no loss. This means a total number of 47 students proposed to participate in the discussions and reflections of the EDIEDPAT platform. The final number of interactions posted in the discussions were 116, a higher number than the students proposed. This shows an average participation of 2.46 interactions per student, an increase of 246.80% more than the expected. All this reflects the success of both students and professors works, exceeding the participation expectations.

Following the last year dynamics, the current one continues employing the above-mentioned methodology. In this sense, a new debate has been launched from the Department of Architectural

History, Theory and Composition. It continues the already launched series of discussions rethinking the post-Covid city life and spaces and has been called "The space for post-Coronavirus education". In this case, the discussion seeks to reflect on the conditions required by post-Coronavirus education and the values that the reuse of obsolete industrial buildings (such as, factories, ships or minimum industrial structures) could provide for it. The objective is for students to wonder how heritage can help to answer the need for more flexible and versatile spaces, while reflecting about spaces flexibility, outdoor areas for teaching (depending on weather conditions), airing indoor classrooms (with the difficult control of temperature, noise and lighting), creating one-way routes, zoning areas, etc.

Until the present moment, 8 students have participated in this last debate. It implies a continuation of the previous academic year but also the beginning of the following discussions that, from the different subjects that build the EDIEDPAT project, will continue feeding this specialized educational forum approaching new discussions and progressively enriching this virtual space.

## 4 CONCLUSIONS

The pandemic situation has led the educational system to an accelerated adaptation, from the previously in-person model, into the online one. To this difficult scenario the lack of a natural evolution must be added, since the pressure and the urgency of the current sanitary situation has supposed a difficulty itself. The exposed virtual tool was designed as an online complement to the in-person lessons; however, the COVID-19 scenario has forced it to become an important part of the new virtual lessons.

Thus, at a time when numerous educational platforms and repositories enjoy a huge success, the EDIEDPAT interactive teaching space seeks to show the relevance of other alternatives specialized by topics. In this case, heritage and tourism stand out as the main axis of this educational platform, inserted within universities and supported by them. The combination of functions being a specialized repository together with other features, such as the creation of a meeting and discussion venue, show the relevance of generating collaborative networks between professors, researchers and students from different subjects and universities. EDIEDPAT's discussions have perhaps served as a virtual substitute, differences aside, of more spontaneously talks that may arise in in-person teaching. They have helped the rigid "virtual class" in which students' participation is less. However, EDIEDPAT ones are more deeply documented and formal contributions.

On the other hand, it should be noted that the student's motivation and interest has been key for every subject, developing the link between theoretical and practical teaching techniques. So, the works have been developed thanks to the conceptual basis of the theoretical lessons, then checked during practical ones and finally completed by using EDIEDPAT. As already mentioned, the platform is conceived as a meta-learning tool which encourages students learning, which is a key competence in the European Higher Education Area [29].

This teaching innovation experience has been based on the implementation of a complementary virtual teaching space, which spontaneously became substitute of in-person system. Its effectiveness and success are verified thanks to the results obtained through the mechanisms of evaluation of the subjects and a greater scope of the knowledge acquired by students in heritage matters.

The fact that participation in the discussions requires prior training by reading specialized texts on each topic, promote progressive progress in the knowledge of the student. Similarly, it promotes that students become familiar with the most common databases in the field of research.

Considering the number of comments and participations in the discussions analysed, it can be concluded that the interactive teaching space as a forum for discussion is successful among the students who have been enrolled in the subjects that are part of EDIEDPAT.

As a repository of teaching material, it allows students to face with greater guarantees of success the development of the subject based on two ideas. On the one hand, the evaluation criteria can be clearly exemplified based on the work of previous years. On the other hand, it encourages students to work on building their own knowledge from individual research and self-assessment.

This virtual tool fulfilled a function of knowledge dissemination and transfer and, therefore, acquires a transversal character during the future professional architect-urban planner-heritage expert's training. Therefore, the use of virtual teaching spaces, such as this one, is an opportunity for innovation and improvement of educational activities in the Schools of Architecture.

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